Mathematics and Statistics: Open Access
Received: Jul 20, 2016, Accepted: Aug 17, 2016, Published: Aug 22, 2016
Math Stat, Volume 2, Issue 3
http://crescopublications.org/pdf/msoa/MSOA-2-016.pdf
Article Number: MSOA-2-016

Research Article Open Access

Factors Influencing Students' Motivation to Learning in University Utara Malaysia (UUM): A Structural Equation Modeling Approach

Masnita Misiran[1*], Zahayu Md Yusof[1], Massudi Mahmuddin[2], Yap Choon Lee[1], NurFarhana Abu Hasan[1] and NurulAdila Mohammad Noor[1]

[1]School of Quantitative Sciences, College of Arts and Sciences, University Utara Malaysia, 06010 Sintok, Kedah, Malaysia
[2]School of Computing, College of Art and Sciences, University Utara Malaysia, 06010 Sintok, Kedah, Malaysia

***Corresponding Author:** Masnita Misiran, School of Quantitative Sciences, College of Arts and Sciences, University Utara Malaysia, 06010 Sintok, Kedah, Malaysia; Tel: +604 9286302, Fax: +604 9286309; E-mail: masnita@uum.edu.my; masnita.misiran@gmail.com

Citation: Masnita Misiran, Zahayu Md. Yusof, Massudi Mahmuddin, Yap Choon Lee, NurFarhana Abu Hasan and NurulAdila Mohammad Noor (2016) Factors Influencing Students' Motivation to Learning in University Utara Malaysia (UUM): A Structural Equation Modeling Approach. Math Stat 2: 016.

Abstract

This study aims to investigate relationship between the contributing and prominent factors leading to UUM student's motivation in learning activities. A total sample of 377 students was included in the study. A questionnaire containing 35 statements was distributed randomly to the respondents. The data analysis was conducted using SPSS and AMOS software. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modelling (SEM) were performed on the samples. The findings showed that classroom-related factors, self-efficacy factor and family and peer's influences factor have significant and positive influence on students' learning motivation; with classroom-related factors being the dominant factor amongst the factors. This study provides useful guidelines for university authorities to improve their student's motivation in learning activities which in turn enhance their academic performances.

Keywords: Factors analysis; Student's motivation; Structural equation modelling (SEM).

1. Introduction

Motivation has long been identified as the key parameter for success and achievement of marvellous academic grades among students[1 - 3]. Motivation to learn is student's commitment to learn and acquire premium academic grades which can aid to their future occupational career [4]. Lack of motivation resulting to lack of interest in academic and may promote to drop out among university students [5]. Dropped out students would find difficulties to search for good job, and consequently, less quality manpower will dampen the economy in a developing country such as Malaysia [6].

However, report from the World Bank in 2013 [7] shows recent trend illustrates the deteriorating in Malaysian education standards despite government spending of the equivalent 3.8 per cent of its gross domestic product on education; which is more than twice the average 1.8 per cent amongst ASEAN nations. The worsening of education quality may jeopardize country's aim to gain a high-income nation by 2020. Underachievement and school disengagement are believed to be amongst the factors and ascribes to the lack of students' motivation in learning. Such issue should be addressed according. As such, this article aims to explore the underlying possible contributing factors which affect students' motivation in learning. We also will determine the dominant factors which influence students' motivation in learning. Some factors from the literatures to support the hypothesized relationship model related to student's motivation in learning include the classroom-related factors, self-efficacy, family and peer influences.

Some classroom-related factors include teacher and class environment. Halawah [8] suggests that teacher's personal quality is the most important factor that influences Al-Ain University students' motivation to learn from students' perspective. This view also supported by some studies including Chang & Chang [9], Zou& Liang [10] and Mokhtaret al. [6].The way classroom being structured with conducive environment also facilitates student's motivation and engagement toward learning activities [11, 12, 8].

For self-efficacy factors, Lapp-Rincker [13] found that there is a positive relationship between self-efficacy and achievement motivation in honours students. This relationship indicates that high self-efficacy individuals are more likely to work hard, have desires to perform a task well,more persevere when confronting with adversity, accept challenging and difficult tasks and have high internal standards for excellence. Zimmerman [14] also supported this statement that self-efficacious students engage in difficult tasks more readily, spend more effort to manage task demands, persist longer, and feel less anxious, stressed cum depressed when they encounter difficulties than those who doubt their capabilities. Fu [15]and Mills [16]argued that students with higher levels of self-efficacy had higher levels of motivation to achieve success and can contribute to achievement of college intermediate-level French students, respectively. Students who perceived themselves as capable of handling their own activities are more confident and motivated about attaining higher academic performance [17].

For family and peer factors, Toston[18] proposed that high parental expectation and student perceptions of parental involvement contributed significantly to students' mastery goal orientations thus lead to development of goal's achievement that reflect intrinsic motivation for achievement. The family financial status, the family expectations and the family conditions also have a strong positive impact on students' desire to study or also known as motivation. Additionally, peer support also affects students' motivation to excel in academic performance.Peers matter in learning processes as they particularly induce higher motivation among themselves [19 - 22].The proposed framework of this study is shown in Figure 1.

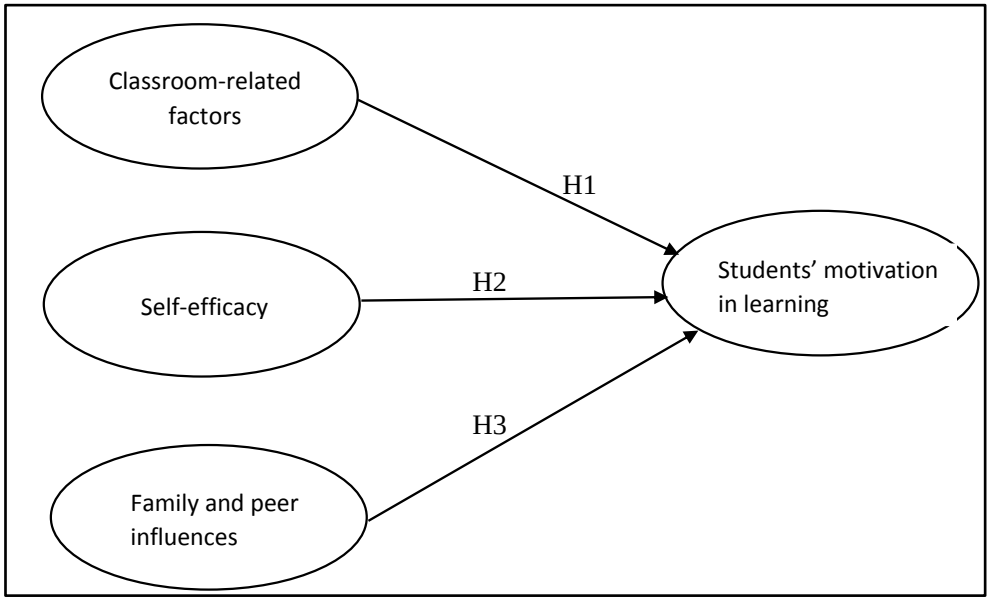


Figure 1: Proposed Conceptual Model

2. Methodology

Sampling Design and Procedures

The research focuses on 20,000 UUM students as target population. These students staying at 15 student's residential halls which are located at route A, B, C and D. Multi-stage sampling method was adapted for data collection. Of the 15 student's residential halls, 5 student residential halls are selected by simple random sampling using random number generator in SPSS. For each student's residential hall, we selected one block out of the total blocks by simple random sampling (5 blocks in total). For each block, we randomly selected 40 rooms from a list of room's numbers, and then distributed questionnaires to the 80 residents (assuming each room consists of 2 occupants). 400 answered questionnaires are expected to cater for unforeseen circumstances such as any missing and incomplete answered questionnaires.

Determination of Sample Size

In order to determine the sample size for this research study, the following sample size formula is used:

$$n = \frac{NZ^2 \times 0.25}{[d^2 \times (N-1)] + [Z^2 \times 0.25]},$$

where n is the sample size required, N is the total population size (known or estimated), d is the precision level (usually 0.05 or 0.10) and Z is the number of standard deviation units of the sampling distribution corresponding to the desired confidence level.

Since the population size is 20,000 (with 95% confidence level and 5% precision level), therefore,

$$n = \frac{20000\,(1.96)^2 \times 0.25}{[0.05^2 \times (20000-1)] + [1.96^2 \times 0.25]} \approx 376.94$$

Thus, 377UUM undergraduates is selected as respondents.

Data Collection and Instrumentation

A self-administered questionnaire was designed and tested among students prior to the distribution to gauge their understanding and the relevancy of the measures. The questionnaire consisted of two parts – the *Demographic Information* and *Determinants of Motivation in Learning*. Demographic information obtained consisted of gender, current semester, college and current grade point average (GPA). The determinant of motivation in learning consists of classroom-related factors, self-efficacy and family and peer influences; all factors as suggestedbased on the literatures. In addition, students' motivation in learning was also measured. All 35 survey items in the determinants of motivation in learning category were measured at 7 point Semantic scale in which "1" represented "*Strongly Disagree*" and "7" represented "*Strongly Agree*".

3. Analysis and Results

Descriptive Analysis

Table 1 summarizes the demographic profile of the sample. There were 377 university's students who participated in the survey (*152 males and 225 females*). Majority of the students are from Semester 6 (35.8%) and minority in Semester 5 (4.5%); with respondents scattered between College of Business, COB (50.1%), College of Art and Sciences, CAS (35.0%) and College of Government, Law and International Studies, COLGIS (14.9%). TheirCGPA reside in second class upper (245 respondents), second class lower (66), first class (57).

Table 1: Distribution of respondents UUM students on the basic demographic factors

Demographic factors	Categories	Number of respondents and Percentage (%)
Gender	Male	152 (40.3%)
	Female	225 (59.7%)
Semester	2	68 (18.0%)
	3	30 (8.0%)
	4	127 (33.7%)
	5	17 (4.5%)
	6	135 (35.8%)
College	CAS	132 (35.0%)
	COB	189 (50.1%)
	COLGIS	56 (14.9%)
CGPA	First class (3.67-4.00)	57 (15.1%)
	Second class upper (3.00-3.66)	254 (67.4%)
	Second class lower (0.00-2.99)	66 (17.5%)

Inter-item consistency reliability was assessed by the Cronbach's alpha reliability coefficient to ensure the stability and consistency of respondent's answers to all the measured items.Fan &Lê[23]suggested aCronbach's Alpha coefficient value that is greater than 0.6 is considered to be acceptable. Table 2 showed Cronbach's Alpha equal 0.929 indicates that the instrument is very consistent and stable.

Table 2: Reliability statistics of the questionnaire

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of items
0.929	0.933	35

Exploratory Factor Analysis (EFA)

An exploratory factor analysis with varimax rotation was conducted on the collected data of the responses to the 30 items to determine the possible underlying factors. The optimal factor solution was determined by fixing the number of factors extracted to three factors based on the literature. Table 3 showed the Kaiser-Meyer-Olkin (KMO) value 0.907 which indicates that the sample and the data were suitable to furtheranalyzed using factor analysis (KMO should be greater than 0.5). Besides, Bartlett's test of sphericity also is significant. The associated probability, 0.000 is less than 0.05; which indicated that the factor analysis model is appropriate for this data.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	5832.566
	df	435
	Sig.	.000

A three-factor solution was identified in the data which accounted for approximately 50% of the variance. Table 4listed the three extracted factors along with their corresponding loadings and percentage of variance explained by each one. The first factor had an eigenvalue of 9.947 and explained 33.156% of the total variance in the model. The second accounted for 9.584% and the third 6.079%.

Table 4: Loading value and percentage of variance explained by each factor

Factor	Eigenvalue	Percentage of Explained Variances
Factor 1	9.947	33.156
Factor 2	2.875	9.584
Factor 3	1.824	6.079

Exploratory factor analysis methods rely on various rules of thumb, with factor loading cut-off criteria ranging from 0.30 to 0.55 for establishing what are considered to be a strong factor loading coefficient [24]. By using this criterion, only items with loading value greater than or equal to 0.30 were retained. This resulted in retaining all the items in the questionnaires because all the items were highly correlated with the three extracted factors. The loading values of the 30 items were summarized in Table 5. All items were loaded on the expected factors, which aligns with how they were originally designed.

Table 5: Item loadings with the three extracted factors

No.	Item	Factors		
		1 Classroom-related factors	**2 Self-efficacy**	**3 Family and peer influences**
1	Lecturers give early feedback.	**.663**	.022	.068
2	Lecturers give feedback after tests and assignments.	**.687**	-.045	.004
3	Lecturers' enthusiasm towards teaching.	**.784**	.044	.078
4	Fair and objective evaluations.	**.799**	.060	.167
5	Lecturers have good relationship with me.	**.743**	.038	.244
6	Lecturers are patient.	**.735**	.123	.170
7	Lecturers use a variety of teaching methods.	**.712**	.174	.101
8	Lecturers attract my attention.	**.741**	.239	.074
9	Lecturers encourage us in discussion.	**.684**	.272	.034
10	Creating a learning community with cooperation.	**.658**	.316	.059
11	Assigning tasks that are realistic.	**.661**	.365	.029
12	Creating open and positive atmosphere.	**.601**	.357	-.021
13	The course is well-organized.	**.629**	.418	.074
14	The contents are exciting and challenging.	**.633**	.405	.072
15	Lecturers present lectures appropriately.	**.568**	.485	.059
16	Learning in a clean and comfortable classroom with functional equipment.	**.534**	.382	-.063
17	Whether the content is difficult or easy, I am sure that I can understand it.	.220	**.623**	.158
18	I am sure that I can do well in the tests.	.288	**.702**	.162
19	I am confident about understanding difficult concepts.	.229	**.583**	.255
20	I can solve most problems if I invest the necessary effort.	.284	**.619**	.066
21	When exercises are too difficult, I do not give up or only do easy parts.	.026	**.641**	.136
22	When I find the content is difficult, I try to learn it.	.022	**.606**	.203
23	I am in university primarily because I am expected to get a degree.	.118	.176	**.394**
24	My parent(s) would be very disappointed in me if I didn't get a university degree.	.001	.119	**.464**
25	There were considerable pressures on me from my parents or family to get a university degree.	-.009	.047	**.660**
26	I feel demotivated because of my family's poverty and/or financial problems.	-.004	-.002	**.644**
27	There were considerable pressures on me from my friends to get a university degree.	-.019	.050	**.730**
28	I still want to go to class even when my friends don't go.	.209	.279	**.500**
29	I study best when I am alone.	.204	.093	**.567**
30	I feel that the smarter I am, the more accepted I will be by other students.	.098	.140	**.616**

Reliability Test of each Item under each Factor after Factor Analysis

The reliability tests were conducted for each item under each factor using Cronbach's Alpha. The research revealed that Cronbach's coefficient alpha range from 0.744 to 0.937 (see Table 6), which indicated good reliability and internal consistency of each construct.

Table 6: Reliability coefficient of the extracted factors

Factor	Number of cases	Number of items	Cronbach's Alpha
Classroom-related factors	377	16	0.937
Self-efficacy	377	6	0.802
Family and peer influences	377	8	0.744
Motivation in learning	377	5	0.870

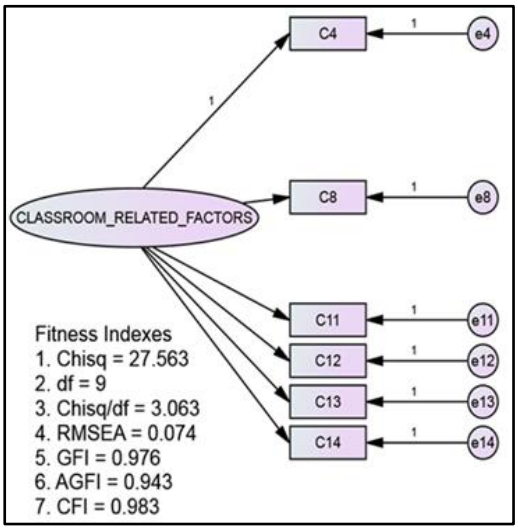
Confirmatory Factor Analysis (CFA)

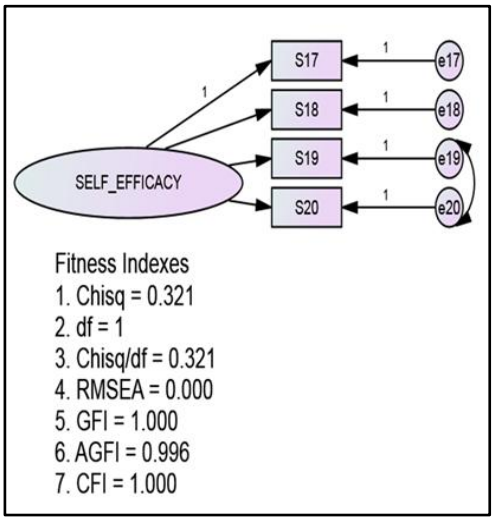
Confirmatory factor analysis was used to test the reliability of a measurement model. AMOS 22 was used to perform CFA on all the measuring items retained by EFA. Firstly, any item with factor loading less than 0.6 should be deleted in order to achieve unidimensionality[25]. The deletion should be made one at a time with the lowest factor loading item to be deleted first. The model is then re-specified and run again until there is no item with factor loading less than 0.6. Next, fitness indexes of the measurement model are obtained to assess how well the data at hand fits the model. If the fitness index is not satisfied, modification indices (MI) are examined. MI above 15 indicates the correlated error between items. To solve the correlated errors, delete the item or set the redundant items to be "free parameter estimate" by using the double headed arrow.

In the study, the individual measurement models were evaluated by normed chi square (Chisq/df), the goodness of fit index (GFI), the adjusted goodness of fit (AGFI), the comparative fit index (CFI) and the root mean square of error approximation (RMSEA) (see Figure 2). The threshold values for all these fit indices were considered when evaluating the measurement model. For instance, cut-off values are less than 0.50 for Chisq/df, greater than 0.90 for GFI, greater than 0.90 for AGFI, greater than 0.90 for CFI and less than 0.08 for RMSEA[25]. Each individual measurement model meets the level of acceptance for every index, which indicates every individual measurement model is good fit. Table 7 summarizes the results of these tests.

Table 7: Fitness measures for each individual measurement model

Factor indicator	Parsimonious fit	Absolute fit		Incremental fit	
	Chisq/df	RMSEA	GFI	AGFI	CFI
Classroom-related factors	3.063	0.074	0.976	0.943	0.983
Self-efficacy	0.321	0.000	1.000	0.996	1.000
Family and peer influences	0.627	0.000	0.998	0.992	1.000
Motivation in learning	0.025	0.000	1.000	1.000	1.000





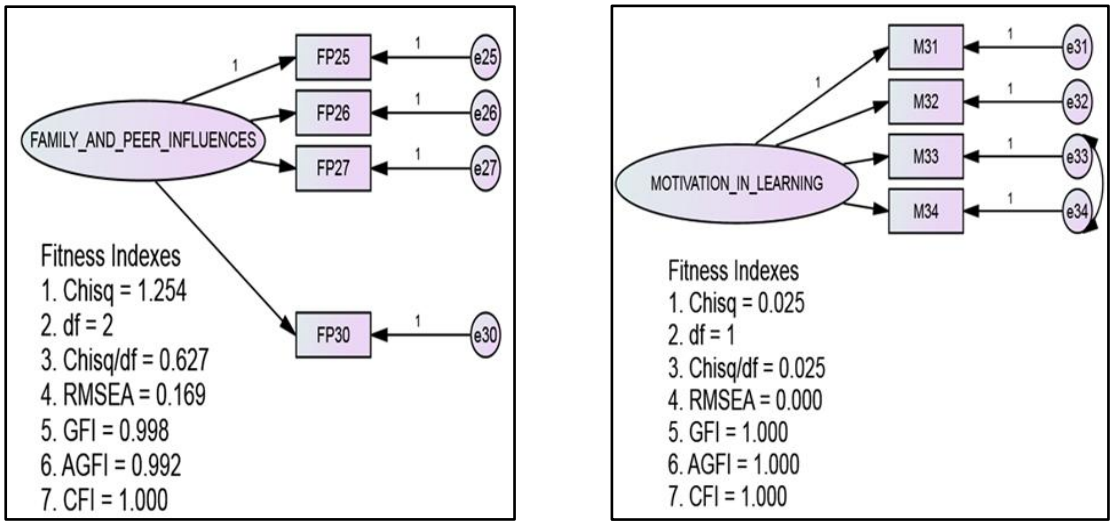


Figure 2: Measurement models

The unidimensionality, validity and reliability of the measurement model as well as normality for the data need to be examined prior to modelling the structural model[25]. Table 8 shows the Cronbach's alpha values and construct reliability (CR) for each factor achieve the required levels. On the contrary, average variance extracted (AVE) for self-efficacy, family and peer influences are lower than the acceptable value of 0.50. Huang, Wang, Wu & Wang [26]stated that the convergent validity of the construct is still adequate if composite reliability is more than 0.6 even though AVE is less than 0.5 (as cited in). Therefore, the validity and reliability of the measurement model are achieved.

Table 8: CFA report summary for each individual measurement model

Construct	Item	Factor Loading	Cronbach alpha (above 0.6)	CR (above 0.6)	AVE (above 0.5)
Classroom-related factors	C4	0.629	0.881	0.882	0.557
	C8	0.708			
	C11	0.781			
	C12	0.758			
	C13	0.818			
	C14	0.770			
Self-efficacy	S17	0.726	0.795	0.780	0.485
	S18	0.929			
	S19	0.521			
	S20	0.529			
Family and peer influences	FP25	0.564	0.712	0.726	0.418
	FP26	0.694			
	FP27	0.863			
	FP30	0.359			
Motivation in Learning	M31	0.768	0.859	0.854	0.599
	M32	0.945			
	M33	0.698			
	M34	0.653			

Based on Table 9, the diagonal values (in bold) are the square root of AVE while other values are the correlation between the respective constructs. The discriminant validity is achieved when the diagonal value is higher than the values in its row and columns. Thus, in this case, the discriminant validity is achieved.

Table 9: CFA results summary for discriminant validity

Construct	Classroom-related factors	Self-efficacy	Family and peer influences	Motivation in learning
Classroom-related factors	**0.746**			
Self-efficacy	0.592	**0.696**		
Family and peer influences	0.182	0.198	**0.647**	
Motivation in learning	0.559	0.489	0.252	**0.774**

The value of skewness shows that all of the items have the skewness values that fall within the range of -1.0 and 1.0. This indicates that the data distribution is normally distributed.

After addressing the issues of unidimensionality, validity and reliability of the measurement models in the study, all constructs are modelled into SEM to analyse the multiple relationships among the constructs simultaneously. The structural model with its fitness indexes is depicted in Figure 3. The model was assessed based on Chisq/df, GFI, AGFI, CFI, and RMSEA. The results of this structural model yielded acceptable high goodness-of-fit indexes. Therefore, it can be said that the hypothesized model fits the observed data well.

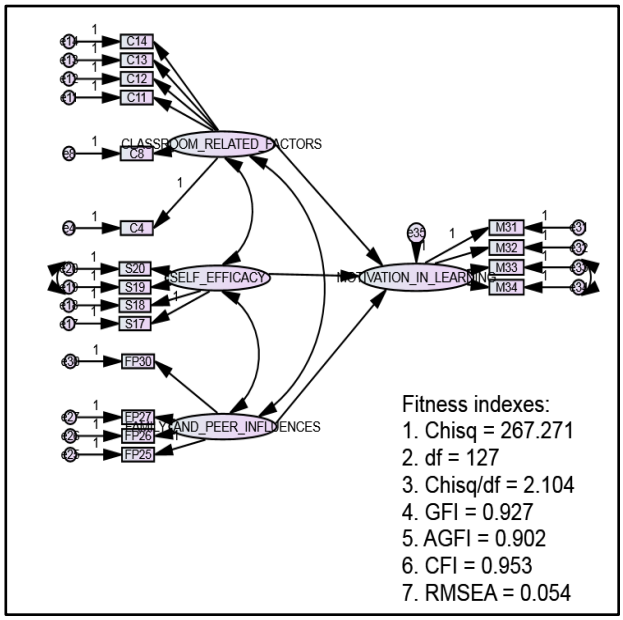


Figure 3: The structural model

Statistical Significance of Parameter Estimates and Hypothesis Testing

All of three paths hypothesized are found to be at level of significance of 0.05. Hence, all the three hypotheses are supported. Among all the significant variables, from the results, most of UUM students perceived that classroom-related factors have the most influence on their motivation in learning, thus fulfilled the motivation of this study.

Table 10: The results of hypothesis testing from the AMOS output

		Hypothesized relationship	Standardized regression weight	Estimate	S.E.	C.R.	P	Hypothesis result
Motivation in Learning	← Classroom -related factors	H1	0.401	.505	.090	5.596	***	Supported
Motivation in Learning	← Self-efficacy	H2	0.225	.261	.078	3.342	.013	Supported
Motivation in Learning	← Family and peer influences	H3	0.134	.156	.063	2.479	***	Supported

*** indicate a highly significant at <0.001

4. Conclusion

The findings of this study identified and examined factors that are responsible for enhancing students' motivation to learn. Results of a structural model analysis suggest that the proposed hypotheses assessing the relationships between the variables are statistically supported. The study revealed that classroom-related factors play prominent role in increasing students' motivation in learning, followed by students' self-efficacy factor and family and peer's influences factor. This particular finding is of extreme importance to the higher learning institutions authorities as it provides a clear indication that classroom-related factors are the main factors which can positively influenced students' motivation in learning. Hence, improvement on the teaching and learning activities should focus on its academicians' expertise, conducive atmosphere and facilities in the classroomto better boost students' motivation to learn; consequently obtain good academic performances. The other two factors (self-efficacy and family/peer influences) should also be fully utilized to ensure better engagement among students in higher learning institution.

References

1. Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure,student motivation, and academic achievement. Annu. Rev. Psychol., 57, 487-503.
2. Hoy, W. K., Tarter, C. J., & Hoy, A. W. (2006). Academic optimism of schools: A force for student achievement. American educational research journal, 43(3), 425-446.
3. Schunk, D. H., & Zimmerman, B. J. (Eds.). (2012). Motivation and self-regulated learning: Theory, research, and applications. Routledge.
4. Ullah, M. I., Sagheer, A., Sattar, T., & Khan, S. (2013). Factors influencing students'motivation to learn in BahauddinZakariya University, Multan (Pakistan). International Journal of Human Resource Studies, 3(2), 90-108. doi:10.5296/ijhrs.v3i2.4135.
5. Alfan, E. & Othman, M.N. (2005). Undergraduate students' performance. Quality Assurance in Education, 13(4), 329-343.
6. Mokhtar, S.F., Md Yusof, Z. & Misiran, M. (2012). Factors affecting students' performance in mathematics. Journal of Applied Sciences Research, 8(8), 4133-4137.
7. World Bank: Worsening education obstacle to Malaysia's high-income hopes. (2013, December 11). Malay Mail Online. Retrieved March 21, 2014, from http://www.themalaymailonline.com/malaysia/article/world-bank-worsening-education-obstacle-to-malaysias-high-income-hopes#sthash.Biy3iKPj.dpuf.
8. Halawah, I. (2011). Factors influencing college students' motivation to learn from students' perspective. Education, 132(2), 379-390.
9. Chang, I. Y., & Chang, W.Y. (2012). The effect of student learning motivation on learning satisfaction. International Journal of Organizational Innovation(Online), 4(3), 281-305.
10. Zou, A., & Liang, A. (2006). Learners' motivation and the implications for classroom Teaching. Canadian Social Science, 2(3), 59-62.
11. Irvin, J.L., Meltzer, J. & Dukes, M. S. (2007). Student motivation, engagement, andachievement.Retrieved March 8, 2014, from http://www.ascd.org/publications/books/107034/chapters/Student-Motivation,-Engagement,-and-Achievement.aspx.

12. Williams, K. C., & Williams, C. C. (2011). Five key ingredients for improving studentmotivation. Research in Higher Education Journal, 12, 1-23.
13. Lapp-Rincker, R. (2003). Achievement motivation in honors students: The role of the impostor phenomenon and self-efficacy. ProQuest Dissertations and Theses, 170.
14. Zimmerman, B.J. (2000). Self-efficacy: An essential motive to learn. Contemporary Educational Psychology, 25, 82-91.
15. Fu, J. (2011). The relationships among self-efficacy, achievement motivation, and work values for regular four-year university students and community collegestudents in China. ProQuest Dissertations and Theses, 187.
16. Mills, N. A. (2004). Self-efficacy of college intermediate French students: Relation to motivation, achievement, and proficiency. ProQuest Dissertations and Theses, 137.
17. Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. American educational research journal, 29(3), 663-676.
18. Toston, L. (2013). Home and school factors and their influence on students' academic goal orientation and motivation. ProQuest Dissertations and Theses, 82.
19. Goethals, G., Winston, G., & Zimmerman, D. (1999). Students educating students: The emerging role of peer effects in higher education. Williams Project on the Economics of Higher Education DP, 51.
20. Hanushek, E.A., Kain, J.F., Markman, J.M., &Rivkin, S.G. (1999). Do peers affectstudent achievement? Retrieved March 9, 2014, from www3.amherst.edu/~sgrivkin/papers/peerpap.pdf.
21. Hancock, D. (2004). Cooperative learning and peer orientation effects on motivation and achievement. The Journal of Educational Research, 97(3), 159.
22. Eisenkopf, G. (2008). Peer effects, motivation and learning. Retrieved March 9, 2014, from ftp://zinc.zew.de/pub/zew-docs/veranst_upload/846/297_eisenkopf.pdf.
23. Fan, S., &Lê, Q. (2011). Developing a valid and reliable instrument to evaluate users 'perception of web-based learning in an Australian university context. MERLOT Journal of Online Learning and Teaching, 7(3).
24. Swisher, L.L., Beckstead, J.W., &Bebeau, M.J. (2004).Factor analysis as a tool for survey analysis using a professional role orientation inventory as an example. Physical Therapy, 84(9), 784-799.
25. Awang, Z. (2012). Structural equation modelling using AMOS graphic. Shah Alam: UiTM Press.
26. Huang, C.C., Wang, Y.M., Wu, T.W., & Wang, P.A. (2013). An empirical analysis ofthe antecedents and performance consequences of using the Moodle platform. International Journal of Information and Education Technology, 3 (2), 217-221.